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MONTHLY REPORT - JANUARY 1981

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SOUTHWEST FISHERIES CENTER

LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - JANUARY 1981

STATUS OF PUBLICATIONS

Published

Ahlstrom, Elbert H. and H. Geoffrey Moser. 1980. Characters useful in identification of pelagic marine fish eggs. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 121-131.

Characters of importance in identifying pelagic marine fish eggs can be divided into two categories: characters independent of the embryo and characters associated with the developing embryo. Characters independent of the embryo would include egg shape, egg size, character of chorion, character of yolk, presence or absence of oil globules, and width of perivitelline space.

Planktonic marine fish eggs are usually globular in shape and range in size between 0.5 and 5.5 mm. We estimate that over 40% of the kinds of pelagic eggs are under 1.0 mm in diameter, 30% are between 1.0 and 1.5 mm, 15% are between 1.5 and 2.0 mm, and that about 14% are over 2.0 mm in diameter.

The chorion is usually smooth, but can be variously ornamented (polygonal network, spines, swellings, etc.). The perivitelline space is usually narrow but is wide in eggs of some primitive teleost groups (Anguilliformes and many clupeids). The yolk can be segmented or homogeneous. Oil globules range in number from none or one to many. About 25% of pelagic fish eggs lack an oil globule, 15% have two to many oil globules, and 60% have a single oil globule.

Characters associated with embryos would include pigment patterns, number of myomeres, length of gut, type of fin fold, position of heart, state of development at blastophore closure and at

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hatching, shape of yolk sac on late-stage eggs and newly hatched larvae, position of oil globule(s) in the yolk sac, and special embryonic characters such as the elongated fin rays that form in trachipteroid eggs.

Alvarino, Angeles. 1980. The relation between the distribution of zooplankton predators and anchovy larvae. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 150-160

Monthly CalCOFI cruises of 1954, 1956, and 1958 were analyzed for abundance of populations of species of Chaetognatha, Siphonophorae, Chondrophorae, Medusae, and Ctenophora. Data were also noted on other abundant zooplankters in the samples (copepods, euphausiids, decapod larvae, pteropods, heteropods, polychaetes, salps, doliolids, and pyrosomes). Information was grouped into three categories of abundance of anchovy larvae per standard haul (more than 241 anchovy larvae, from 1 to 240, and absence of larvae). In general, concentration of predators was inversely related to aggregations of anchovy larvae. Absence of anchovy larvae coincided with prochordates, decapod larvae, pteropods, heteropods, and polychaetes, and abundance of anchovy larvae concurred with abundance of copepods and/or euphausiids. This habitat can be designated "anchovy water."

Gut content analysis indicated that predatory pressure on fish larvae was weaker when there was abundance of other food animals, e.g. copepods and euphausiids in the waters, as shown by the plankton collections.

D'Vincent, Susan, H. Geoffrey Moser, and Elbert H. Ahlstrom. 1980. Description of the larvae and early juveniles of the Pacific butterfish, Peprilus simillimus (Family Stromateidae). Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 172-179.

Larvae of the stromateid fish, Peprilus simillimus, are relatively common in nearshore samples of California Cooperative Oceanic Fisheries Investigation (CalCOFI) plankton samples taken off central California to Baja California. This paper describes the larvae of P. simillimus from hatching to juvenile and presents criteria for distinguishing early-stage larvae of this species from those of similar-appearing species, in particular the white croaker, Genyonemus lineatus. Analysis of P. simillimus larvae from CalCOFI survey cruises of 1975 showed a near-coast distribution with areas of concentration in the Southern California Bight and Bahia Sebastian Viscaino, where the shelf is relatively broad.

Hobson, E. S. 1980. The structure of reef-fish communities in the Hawaiian archipelago: Interim status report, pp. 57-70. In R. W. Grigg and R. T. Pfund (eds.), Proceedings of the Symposium of Status of Resource Investigations in the Northwestern Hawaiian Islands, April 24-25, 1980, Univ. Hawaii, Honolulu, HI. Sea Grant Misc. Rep., UNIHI-SEAGRANT-MR-80-04.

In this paper the authors describe the current status of a study of the structure of reef-fish communities in the Hawaiian archipelago. The following generalizations are evident in the data collected thus far: 1) Forces that determine the distribution patterns involve either environmental factors (including biological interactions), or fishing pressures. 2) Northwestern communities show close ties with communities in both the warm-temperate and the tropical western Pacific, but southeastern communities show close ties only with communities in the tropical western pacific. 3) The predominant members of the northwestern communities, as a group, are better attuned to the overall Hawaiian environment than are the predominant members of the southeastern communities: they are more evenly distributed over the archipelago and include proportionally more endemics. 4) Many species prominent in shallow-water communities in the northwest occur only in deeper water southeastward. 5) The southeastward distributions of species in the northwestern communities are limited by both environmental factors and fishing pressures, but the northwestward distributions of species in the southeastern communities are limited only by environmental factors.

Hunt, George L., Jr. and John L. Butler. 1980. Reproductive ecology of western gulls and Xantus' murrelets with respect to food resources in the Southern California Bight. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 62-67.

Western Gull (Larus occidentalis) and Xantus' Murrelet (Endomychura hypoleuca) reproduction on Santa Barbara Island, California, showed considerable sensitivity to changes in pelagic fish populations in the Southern California Bight. Western Gulls responded to decreases in the availability of schooling fish by failing to breed or by switching to alternate foods. The use of alternate foods may result in lower growth rates and chick survival. Timing of breeding was not significantly changed. Xantus' Murrelets foraged on larval fish, particularly larval northern anchovies (Engraulis mordax). Murrelets responded to the unavailability of larval anchovies either by failing to breed or by delaying breeding until larval anchovies became available. Our results demonstrate not only the sensitivity of marine bird reproduction as an indicator of the availability of their food resources, but also how specific differences in reproductive biology influence the flexibility of response to environmental change.

Hunter, J. Roe and Beverly J. Macewicz. 1980. Sexual maturity, batch fecundity, spawning frequency, and temporal pattern of spawning for the northern anchovy, Engraulis mordax, during the 1979 spawning season. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 139-149.

Fifty percent of anchovy females reach sexual maturity by 96 mm standard length (95% confidence level 94-97 mm). Spawning batch fecundity, estimated from counts of hydrated eggs, was an exponential function of female weight ($\ln Y = 4.2886 + 1.6281 \ln X$, where Y = number of hydrated eggs and X = female weight less ovary weight in grams). In the Los Angeles Bight the proportion of the population spawning/day (incidence of day-old post-ovulatory follicles) declined from 13.4% of the females in January-February to 10.0% in March-April and fell to 3.4% by June. Incidence of atresia in ovaries increased as the frequency of spawning declined. The percentage of females classed as post-spawning on the basis of the atretic condition of the ovary was 0.3% in January-February and 12% in March-April. Spawning of anchovy in Monterey Bay had nearly ended in March, and 71.9% of the females were classed as post-spawning.

The incidence of females with new post-ovulatory follicles and with hydrated eggs indicated that by sunset eggs were completely hydrated and spawning began; spawning reached a maximum between 2200-2300 hours and ended by 0200 hours. At 0600 hours females destined to spawn the next night began to hydrate eggs.

Lasker, Reuben and John C. Brown. 1980. Free-fall particle counter for ocean surveys. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 207-210.

For a study of particles in the sea as potential food organisms for larval anchovies (Lasker 1975, 1978), a survey method was needed to profile particle concentrations with depth rapidly during California Cooperative Oceanic Fisheries Investigations (CalCOFI) surveys.

To do this, a microprocessor-based free-fall particle counter (FFPC) was designed and constructed (Brown 1977) based on the well-known principle that a particle passing into an electrical field in an electrolyte causes a change in electrical properties if resistivity of the particle differs from that of the electrolyte. The widely used Coulter Counter is an example of an instrument based on this principle. In this report, laboratory calibration and a field test of the FFPC are described as well as modifications to the instrument that permit fast deployment of the probe, shipboard display, and printing of the data.

Shomura, Richard S. 1980. U.S.A. Fishery Conservation and Management Act of 1976 and its research requirements. Indo-Pac. Fish. Proc. 19 Sess., Kyoto, Japan, 21-30 May 1980, Sect. I and II: 353-356.

Stauffer, Gary D. 1980. Estimate of the spawning biomass of the northern anchvoy central subpopulation for the 1979-80 fishing season. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 17-22.

The 1979 spawning biomass estimate for the central subpopulation of northern anchovies was 1,723,000 short tons. This estimate is based on the anchovy larva abundance as measured by four egg and larva surveys conducted over the period January-May 1979. Spawning biomass was estimated from larvae abundance using a method developed by P. E. Smith. Based on the Pacific Fishery Management Council's Anchovy Plan (PFMC 1978), optimum yield for the central subpopulation during the 1979-80 season was 241,000 short tons. The optimum yield in the U.S. Fishery Conservation Zone was 168,700 short tons. The 1979-80 U.S. reduction quota was 156,100 short tons.

Stauffer, Gary D. and Keith Parker. 1980. Estimate of the spawning biomass of the northern anchovy central subpopulation for the 1978-79 fishing season. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 12-16.

The 1978 spawning biomass estimate for the central subpopulation of northern anchovies was 1,304,000 short tons. This estimate is based on the anchovy larva abundance as measured by four egg and larva surveys conducted over the period January-June 1978. Spawning biomass was estimated from larva abundance using a method developed by P. E. Smith. Based on the Pacific Fishery Management Council's Anchovy Plan (PFMC 1978), optimum yield for the central subpopulation during the 1978-79 season was 101,333 short tons. The optimum yield in the U.S: Fishery Conservation Zone was 70,993 short tons. The 1978-79 U.S. reduction quota was 58,333 short tons.

Sumida, Barbara Y. and H. Geoffrey Moser. 1980. Food and feeding of Pacific hake larvae, Merluccius productus, off southern California and northern Baja California. Calif. Coop. Oceanic Fish. Invest. Rep. XXI: 161-166.

The diet of larval Pacific hake, Merluccius productus, consisted primarily of copepod eggs and calanoid copepod adults, copepodites, and nauplii, based on an examiniation of material collected in March 1975 off southern California and northern Baja California. In spite of a large mouth, Pacific hake larvae ingested a broad size range of prey, with a concentration of food particles 70-200 µm in width. First-feeding Pacific hake larvae fed upon a wide range of prey (50 to about 400 µm prey width), and the range in prey sizes changed little with larval length from 3.0-10.7 mm. Although copepod eggs, nauplii, and copepodites were a significant portion of the diet in numbers of prey, adult copepods contributed aout 74% of prey volume.

Observations of feeding incidence in relation to time of capture revealed a slow rate of gut evacuation. Larvae began feeding at about 1000 hours, and the number of prey items found in the gut increased during the day, reached a maximum after sunset, and thereafter decreased gradually. The comparatively large mouth, slow evacuation rate, and ability to feed on copepod stages from egg to adult seem to form an adaptive strategy for success in the relatively deep and cold strata inhabited by Pacific Hake larvae.

Uchida, Richard N. 1981. Synopsis of biological data on frigate tuna, Auxis thazard, and bullet tuna, A. rochei. NOAA Tech. Rep. NMFS Circ. 436, 63 p. [FAO Fish. Synop. 124.]

Approved by Center Director

Lo, Nancy C. H, Joseph E. Powers, and Bruce E. Whalen. Estimating and monitoring incidental porpoise mortality in the eastern tropical Pacific tuna purse seine fishery. For consideration for publication in the Fishery Bulletin, U.S.

Mendelssohn, Roy. Discount factors and risk aversion in managing random fish populations. For consideration for publication in the Canadian Journal of Fisheries and Aquatic Sciences.

Administrative Reports

La Jolla Laboratory

Miller, D. 1981. Marine mammal - fisheries interaction study, annual report for the period of July 1, 1979-June 30, 1980. SWFC Admin. Rep. LJ-81-01C.

Worthen, G. L. 1981. Preliminary analysis of the stock assessment potential of Pacific Ocean delphinids by G and C chromosome banding. SWFC Admin. Rep. LJ-81-02C.

Fletcher, J. J. and W. E. Johnston. 1981. Vessel characteristics and summary report of landings and revenues of the northern California crab fleet: Coastwide summary data base, 1974-76. SWFC Admin. Rep. LJ-81-04C.

HONOLULU LABORATORY

INSULAR RESOURCES INVESTIGATION

Northwestern Hawaiian Islands (NWHI) Cruises Continue

Richard N. Uchida, Task Leader of the Insular Ecosystem Study, reported that the NOAA research ship, Townsend Cromwell, departed Snug Harbor, Honolulu, on January 17 (cruise TC-81-01) to survey and assess the lobster, shrimp, bottomfish, pelagic and benthopelagic fish resources around the NWHI. Other missions of the cruise include providing logistic support to the Honolulu Laboratory, University of Hawaii, and the U.S. Fish and Wildlife Service (USFWS) personnel who will be conducting a census of the Hawaiian monk seal, Monachus schauinslandi, and studies on sea birds. The scientific party includes Chief Scientist James H. Uchiyama, Fishery Biologist Thomas K. Kazama, Wildlife Biologist Eric P. Knudtson, Research Assistants Alan R. Everson, Robert L. Humphreys, Jr., and Gordon W. Tribble, and Cooperating Scientists Sheila Conant of the University of Hawaii and Audrey Newman and Mark Rauzon of the USFWS.

The Cromwell's operations will emphasize shrimp and crab trapping, night-light fishing, and shrimp trawling to improve unerstanding of the distribution and seasonal abundance of the caridean shrimps, Heterocarpus ensifer and H. laevigatus, penaeid shrimp, Penaeus marginatus, kona crab, Ranina ranina, and opelu, Decapterus macarellus, which were found in abundance of French Frigate Shoals during TC-80-05.

Cruise to the Western Pacific Planned

R. Uchida reported that a contract was awarded the F/V Typhoon for a research cruise around Guam and the Northern Mariana Islands. Objectives of the cruise include 1) evaluating the feasibility of operating a small- to medium-sized multipurpose fishing vessel in these waters; 2) evaluating the suitability and effectiveness of various types of fishing gears, refining their performance, and improving them for subsequent routine sampling; and 3) fishing for shrimps, pelagic fishes, benthopelagic fishes, and bottomfishes to determine their availability and catchability in relation to changes in the diurnal and lunar cycles.

Reginald M. Gooding, Fishery Biologist, will be Chief Scientist on the first half of the cruise, which will concentrate on waters around Guam. Gooding will be assisted on the cruise by Research Assistant Robert B. Moffitt. Moffitt will be Chief Scientist on the second half of the cruise, which will be conducted primarily around Saipan and Tinian. Assisting Moffitt will be research Assistant Michael P. Seki.

Sharks and Lobsters from NWHI Fishery Resources Studied

R. Moffitt continued work on various aspects of the ecology of marine species occurring in the NWHI. He tentatively identified two species of squalid sharks, Etmopterus lucifer and E. pusillus, caught at the Hancock Seamounts. Although these two sharks are widespread, there are no earlier records of their occurrence in Hawaiian waters. Moffitt also reported that the squalid shark, Squalus blainville, is now known as S. mitsukurii, owing to a revision of the group. In addition, the name Congrina aequora has been tentatively assigned to conger eels in the Honoluu Laboratory's collection, although there appear to be long-snout and short-snout forms of the eel. The name apparently applies only to the long-snout forms, so additional studies will be required to determine the identify of the short-snout form.

Research Assistant Victor A. Honda continued work on the relationship of carapace length and fecundity of the spiny lobster, Panulirus marginatus. Honda processed 18 berried lobsters collected on cruises to the NWHI in 1980. Most of these lobsters fell in size classes for which fecundity estimates were previously unavailable. These new data should thus provide a better estimate of the carapace length-fecundity relationship of P. marginatus.

Paper on Fish Yields From Tropical Ecosystems Drafted for Workshop in Australia

Dr. Jeffrey J. Polovina, Statistician, reported that he collaborated with Dr. Gerald Marten of the East West Center in preparing a draft of a paper entitled, "Comparative study of fish yields from various tropical ecosystems." The paper notes that sufficient information has now accumulated on the fish yields in different parts of the tropics and that these yields can vary by a factor of more than 10,000 depending on the location of the fishery and the prevailing ecological conditions. Fish yields associated with aquatic ecosystems such as lakes, reservoirs, rivers, lagoons, estuaries, the continental shelf, coral reefs, and the open ocean are examined. Also examined was the extent to which fish yields can be explained by biological or physical characteristics of the various ecosystems and how these characteristics differ among the ecosystems.

The paper was presented by Dr. Marten at the ICLARM/CSIRO Workshop on the Theory and Management of Tropical Multispecies Stocks in Cronulla, Australia, January 12-23, 1981.

Relationship Between Diet and Ciguatoxic Fish Studied

Research Assistant Steven H. Kramer continued analysis of the stomach contents of commercially caught kahala, Seriola dumerili, which were found to be ciguatoxic in routine radioimmunossays (RIA). Kramer reported that the stomach contents of 17 fish he examined in January showed no consistent pattern to indicate that toxicity was related to any particular food item. These results will be added to the expanding data base for ciguatera research on the kahala.

Fishing Gear Readied for CROMWELL and TYPHOON Cruises

Research Assistant Paul M. Shiota worked with the field parties of Townsend Cromwell cruise TC-81-01 and the F/V Typhoon charter in fabricating fishing gear and supervising other precruise preparations. He was assisted in fabricating fishing gear by Research Assistants Darryl T. Tagami, Bert S. Kikkawa, Nathaniel Shippen, V. Honda, and S. Kramer. The gear for the Typhoon was shipped by container to Guam and will be held at the University of Guam's Marine Laboratory until the start of the cruise.

R. Uchida completed the final cruise instructions for the F/V Typhoon charter cruise, the Narrative Report for TC-80-05, and the minutes of the Coordinating Council on Research-Northwestern Hawaiian Islands meeting. He also reviewed two Pacific Tuna Development Foundation proposals entitled, "Marshall Islands trolling development project" and "Distant water aku fishing - Hawaii," and reviewed a manuscript by Michael G. King, "The deepwater shrimp resources (Decapoda: Natantia) of Pacific Islands, Part I - Vanuatu (formerly New Hebrides)," which was submitted to Marine Fisheries Review.

FISHERY MANAGEMENT PROGRAM

Systems Analyst Selected for FIN Project

David Hamm, Computer Systems Analyst, has been selected to work on the Honolulu Laboratory component of the Southwest Fishery Information Network (FIN). The objective of this project is to establish a cooperative fishery data, statistics, and information system among the states and territories in the central and western Pacific. To facilitate this, two significant events will be taking place in February. First, a meeting will be held in Honolulu of the individuals who will be working under a contract funded by the Western Pacific Regional Fishery Management Council (WPRFMC) to collect historical data from the Pacific islands fisheries; second, there will be a meeting in Honolulu to address the problem of implementing recommendations resulting from the contract to evaluate the Hawaii fisheries data collection system. Participants in this meeting will include State of Hawaii officials, the contractors, Hamm, and other Southwest Fisheries Center (SWFC) staff.

Honolulu Laboratory Economist Attends Meeting to Review Economic Research

Dr. Michael F. Adams, Industry Economist, met with other economists from the SWFC and the Southwest Region to review economic research and the funding of proposed projects. Adams presented specifications for a cost-earnings study of the deep-sea handline fleet and the longline fleet in Hawaii. The cost-earnings study of fishing firms will serve to link an ongoing economic demand study with biological research on the bottomfish fishery. Dr. Adams is

being assisted by Research Assistant James C. Cooper on the cost-earnings study.

Computer Files on Tuna Data Readied

Mark A. Scheele, Computer Technician, under the general guidance of Fletcher V. Riggs, Fishery Biologist, has continued to make steady progress in implementing an effective tape-oriented tuna data management system. These efforts primarily involve the establishment of computer files with agreed upon record and file formats, extensive data checking and editing when necessary, the cataloguing of these new files as they become available, and the thorough documentation of file characteristics and all procedures or steps taken in creating the files.

Meetings on Bottomfish Fishery Management Plan (FMP) Held

Dr. Robert A. Skillman, Fishery Biologist, met twice with the Executive Director of WPRFMC and others to discuss speeding up work on the Bottomfish Fishery Management Plan (FMP). The Bottomfish Plan Development Team will be reorganized because many of the members have moved from the area or are no longer available. A staff member of the WPRFMC will serve as the chairman of the team. The "Work Plan for the Proposed Development of a Bottomfish Fishery Management Plan," which was drafted by the Executive Director, was reviewed and edited during the meetings. This work plan will shortly be submitted to the National Marine Fisheries Service (NMFS) headquarters for endorsement.

* * * * * * * * * * *

F. Riggs, Fishery Biologist, and Marian Y. Y. Yong, Mathematician, summarized estimated total longline catches and dollar values of billfishes within the fishery conservation zone around Hawaii for the WPRFMC in preparation of a billfish FMP. With the assistence of Gary L. Kramer, Statistician, and N. Shippen, Riggs also summarized available landings and size-frequency data on skipjack tuna landed at the Hawaiian Tuna Packers for the Inter-American Tropical Tuna Commission.

* * * * * * * * * * *

Dr. Skillman has completed a draft of a paper summarizing the tuna statistics collected during his temporary duty with FAO. The paper will be published in Manila, Philippines, in the Working Paper series of the Programme for Tuna Management in the Indian and Pacific Oceans.

* * * * * * * * * * *

G. Kramer has been assisting Dr. Linda L. Hudgins, Fulbright Lecturer at the Instituto Tecnológico Autónomo de México, Mexico, on a draft paper dealing with the procedure and implications of including fish size as a demand shift parameter in an economic model. In addition, he has continued working with Survey and Marketing Services, Inc. on the Wholesale Fish Products Survey and

the Vessel Inventory for Hawaii, Guam, American Samoa, and the Northern Mariana Islands.

Estimated Hawaii Skipjack Tuna Landings in January Below Long-Term Average

The January 1981 Hawaii landings of skipjack tuna were estimated at 36.4 metric tons (mt), which is 7.4 mt below the January 1980 landings and 84.1 mt below the 1964-80 long-term average for January.

PELAGIC RESOURCES INVESTIGATION

Yellowfin Tuna Learns to Discriminate Between Altered and Normal Magnetic Fields

Michael Walker of the University of Hawaii and Dr. Andrew E. Dizon, Leader of the Pelagic Ecosystem Study, report that a yellowfin tuna has been conditioned to respond to an altered geomagnetic field at Kewalo Basin. The experimental stimulus consists of a field whose dip angle and intensity corresponds to the geomagnetic field of polar latitudes. The fish was trained to respond using a discrete trial paradigm in which it is rewarded for a behavior while the field is altered, but punished for the same behavior while the field is normal.

Two tunas (a kawakawa and the yellowfin) have now been conditioned to discriminate between normal (Hawaiian) and altered (polar) magnetic fields. These results, coupled with the discovery of biogenetic magnetite in tuna skulls which is most likely the sensory mechanism, indicate that tunas, like the homing pigeons, possess a well-developed magnetic sensory system that could be used to navigate.

Olfactory Bulb Activity Successfully Recorded in Tuna

Dr. Richard Brill, Scientific Director of the Pacific Gamefish Foundation, Walter Ikehara of the University of Hawaii, and Dr. Dizon reported that they have succeeded in recording the increased brain (i.e., olfactory bulb) activity in tuna resulting from the presentation of artificial and natural prey odors. Although this sort of work is routinely done in freshwater fishes, technical problems makes it a more difficult procedure using saltwater species. Because live tuna require especially delicate handling and surgical procedures, it has taken about 6 months to perfect the techniques to the point where the olfactory bulb activity could be recorded in tuna.

This work is intended to provide information on the natural and artificial odors that will be most attractive to tunas. The eventual goal of the project is to find attractive odors that could be used to enhance the

effectiveness of floating fish aggregating devices, skipjack tuna live bait, and other fishing techniques.

Brill, Ikehara, and Dizon decided to use electrophysiological recording techniques, rather than behavioral studies, because a larger number of artificial and natural odors could be tested in a much shorter period of time. Furthermore, recording-increased olfactory bulb activity in response to odor presentation is the only way to determine odor detection thresholds accurately.

This work is supported by the University of Hawaii Sea Grant Program, the Honolulu Laboratory, SWFC, NMFS, and the Pacific Gamefish Foundation.

Cooperative Squid Research Cruise Underway

Tamio Otsu, Chief of the Pelagic Resources Investigation, reported that the University of Hokkaido's fishery training vessel, Hokusei Maru, arrived in Hilo, Hawaii, on January 24 for a cooperative cruise planned jointly with the Honolulu Laboratory around the Hawaian Archipelago.

The objectives of the cruise are to: 1) assess the availability of squid in the Hawaiian Archipelago by using fishing techniques presently being used in Japanese squid fisheries, including drift gill net, midwater trawl, and machine squid jigs; 2) determine the squid species present in Hawaiian waters and to identify those species that show potential for commercial exploitation; 3) fish for tunas with longlines at selected sites in the NWHI to determine the availability of deep-swimming tunas in the area and the relationship between tuna and squid catches; and 4) collect environmental data off the main Hawaiian Islands south of Oahu.

Operational plans include 13 days of squid fishing off the main Hawaiian Islands from January 28 to February 13. Fishing will be carried out in inshore waters as far as 60 miles from land. From February 20 to March 2, a series of five or more fishing stations will be occupied within 120 miles of islands or banks along the NWHI between Necker and Midway Islands. At each of these stations, tuna longline will be fished during daylight hours and squid jigging will be done at night.

Fishery Biologist Walter M. Matsumoto will be Chief Scientist or Co-Chief Scientist on the cruise during the period from January 24 to March 2. Dr. Tsuneyoshi Suzuki of Hokkaido University will be Co-Chief Scientist from January 24-February 4. Also participating in the cruise is B. Kikkawa.

Laboratory Work for Seabird Food Study Completed

Thomas S. Hida, Fishery Biologist, and M. Seki have completed processing the last of the 4,337 spew samples for a study of the food habits of seabirds. During the month, Hida reexamined most of the unidentified fishes and invertebrates (which were set aside earlier) to make final attempt at identifying the specimes. Seki made photographs of some fish skeletal

material which will be used in a manuscript that will be prepared on the food study.

All the data from the laboratory work have been coded, punched, and verified. Craig Harrison, Cooperating Wildlife Biologist, USFWS, has written some computer programs to obtain outputs from the seabird spew data set. The effort will now be directed at analyzing the data and preparing a manuscript.

Apple II Computer Program for Fish Tracking Experiments Completed

Heeny S. H. Yuen, Fishery Biologist, completed a program for the Apple II computer to collect and record data during fish tracking experiments. The program directs the computer to: read the signals from the transmitter on the fish continuously, convert the signals to depth or temperature depending on the type of tag used, evaluate and decide whether the reading is valid (and not noise), store valid readings every 20 seconds, store observers' comments, log Loran C. positions, and record all the data items in storage on a disk every 30 mintues.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

Division Leader is Co-Investigator for Study of Larval Fish Mortality in the Bering Sea

Dr. Reuben Lasker, Leader of the Coastal Fisheries Division, is co-principal investigator with Dr. Howard Feder, University of Alaska, of a larval fish mortality study in the Bering Sea. M. Elizabeth Clarke, a graduate student from Scripps Institution of Oceanography who is working for Dr. Lasker, sampled in the Bering Sea during the spring of 1979 and 1980 for larval pollock, Theragran chalcogramma, and rock sole, Lepidopsetta bilineata. At the Seward Laboratory of the University of Alaska, Dr. Feder and his graduate students are attempting to raise pollock and rock sole to sexual maturity for the production of viable larvae for experimentation. The ultimate aim of this investigation is to identify areas in the Bering Sea which are adequate feeding grounds for first-feeding larvae and to ascertain which environmental factors are the most critical for survival of these species. The variability of food availability in the nursery area is being monitored and will be related to larval growth and feeding incidence. The relationship between larval food concentration, larval growth, and feeding success will suggest where food is a limiting factor for fish larvae in the Bering Sea.

Analysis of rock sole larvae and pollock larvae gut contents by Clarke showed that copepod eggs are a major food for both species. First-feeding rock sole larvae, however, feed almost exclusively on phytoplankton and other material which has been tentatively identified as "organic aggregates."

The vertical distribution of potential food items for larval pollock has been examined for four stations thus far. Nauplii and copepod eggs occur in the upper 40 m of the water column with peak abundance in the upper 20 m. Most of the pollock larvae were in the upper 40 m. Rock sole larvae occurred in the same depth range. The abundance of food items (exclusive of phytoplankters) ranged from a high of 11/liter to a low of 1.7/liter. Ninety percent of the pollock larvae examined from one station (near the 170 m isobath) had copepod eggs in their guts even though the peak abundance of copepod eggs at this station was only 1/liter.

This month at the Seward Laboratory Mr. J. Hendee spawned rock sole and succeeded in producing fertilized eggs, which will be shipped by air to La Jolla for experimentation.

COMMERCIAL AND RECREATIONAL FISHERIES RESEARCH FOR MANAGEMENT

NOAA Research Vessel, JORDAN, Begins Survey to Assess Anchovy Biomass

Every 3 years the Scripps Institution of Oceanography, the National Marine Fisheries Service and the California Department of Fish and Game conduct cooperative cruises to survey the fish eggs and larvae of important commercial species. Chemical, physical, and biological data are collected simultaneously to describe the oceanic habitat and to correlate oceanographic events with the distribution of spawning and egg and larval mortality.

The first of the 1980-81 CalCOFI survey cruises began in January 1981. The NOAA research vessel, Jordan, assigned to survey the mini-CalCOFI pattern, completed its series of stations on February 1. Bad weather forced cruise leaders to drop the outside stations on lines 67, 63, and 60 in CalCOFI Region 5.

The upcoming cruise, 8102, with the Jordan and the Scripps Institution of Oceanography research vessel, New Horizon, is scheduled to depart February 12. The Jordan will carry out the egg survey using the CalVET net in addition to conducting the standard CalCOFI plankton survey. The California Department of Fish and Game (CF&G) charter vessel, Nelli Belle, will carry out the sonar and midwater survey. Dr. Gary Stauffer, Fishery Biologist, La Jolla Laboratory, will participate in the 33-day cruise which is being led by Ken Mais of CF&G, and will be responsible for the collection of adult anchovies in order to obtain spawning production parameters for the estimate of egg production.

In addition to the collection of trawl samples to obtain spawning anchovies, Stauffer has arranged for samples of adult anchovies to be collected from the Mexican fishery during February, March, and April. He also arranged with the CF&G for the charter of a purse seiner to collect samples of adults during the closed season from the fishing grounds in order to compare the percentage of spawning females in purse seine-caught fish with those caught by midwater trawl.

Soviet Vessel, POSEYDON, Assigned to 1981 US/USSR Cooperative Survey

Since Dr. Gary Stauffer will be at sea on the Nelli Belle during February and early March, he has arranged to have Roger Hewitt, NOAA Corps Officer assigned to the Southwest Fisheries Center in La Jolla, coordinate the 1981 US/USSR cooperative ichthyoplankton survey in his absence. According to Hewitt, the Poseydon is scheduled to arrive in Long Beach in late February. Biological Technician Dimitry Abramenkoff, who is fluent in the Russian language, is scheduled to be the U.S. scientist aboard.

Data Report on Northern California Crab Vessels Issued

Dr. Dan Huppert reports that Jerry Fletcher, a graduate student in economics, has completed the data report on northern California crab vessels. Working with Professor Warren E. Johnston at UC, Davis, Fletcher extracted all landings and vessel characteristics data from the "Coastwide Summary Data Files" (CSDF) pertaining to fishing vessels landing Dungeness crab in ports from Crescent City through Fort Bragg. The resulting fleet of 247 vessels was stratified by home port and length class. For the fleet thus defined, Fletcher created landings and revenue summaries which show landings by species group (crab, salmon, albacore, groundfish, rockfish, black cod, herring, shrimp, and miscellaneous), by vessel length class, and home port. The data tables and project description are being distributed as SWFC Administrative Report LJ-81-04C.

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Cynthia Thompson, part-time economist working on the partyboat recreational survey, finished documenting the various data files and statistical analyses she has performed during the past year. Dr. Huppert and Jane McMillan will use the data summaries provided by Thomson, who resigned her position on January 14, to write a paper for Marine Fisheries Review some time this spring.

Data on Vessel Operating Units and Landings in U.S., 1965-1976, Presented in Paper

Jane McMillan, Economist, reports that she has completed the first draft of a paper reviewing the data on vessel operating units and landings in the United States, 1965-1976. This paper describes in detail the sources of data: NMFS computerized data files and a NMFS telephone survey of boat yards. The data are summarized by gear type and by area. The value of fishing vessels was estimated from cost of construction and length data gathered in the NMFS telephone survey. The construction cost regression equations and the graphs of these equations are presented in the paper. Summary tables of the data are presented in the paper's appendix.

McMillan also completed the organization and documentation of the computer programs and of the data for easy future reference.

Information on Sablefish (Black Cod) Survey Distributed

According to Dr. Gary Stauffer, reports on the October-November sablefish survey conducted by the NOAA research vessel Chapman were prepared by scientists from the Northwest and Alaska Fisheries Center. Together with tag reward posters, the survey report was forwarded to California Department of Fish and Game biologists and Sea Grant marine advisors in the coastal ports. Stauffer, who participated in the cruise, also distributed the cruise report and posters written in Spanish to the Instituto Nacional de Pesca biologists in Ensenada.

Study Continues on Factors Affecting Spawning Behavior of Female Anchovies

Susan Picquelle, Statistician, continued to study factors affecting the spawning behavior of female anchovies and factors affecting the vulnerability of spawning females to capture by a midwater trawl. By identifying and hence controlling these factors, it is possible to obtain a less biased sample to estimate spawning fraction. The spawning fraction calculated from trawl samples taken in 1978-1980 appears to vary with a) time within the spawning season, b) hour of night the sample is taken, c) the lunar cycle. Picquelle is trying to determine whether these factors are directly related to the spawning behavior or are just affecting the vulnerability to capture:

a) Spawning season - It is well established that spawning fraction varies over the year, peaking in February and March.

b) Diurnal cycle - By following spawning fraction over the time of night, Picquelle has inferred that spawning behavior itself affects vulnerability to capture.

c) Lunar cycle - She is currently examining the pattern of spawning fraction over the 30-day lunar cycle. There is a large decrease in the estimated fraction during the last quarter (between full and new moon). Picquelle will next try to determine if there is a real decrease in the incidence of spawning during the last quarter, if the apparent decrease is an artifact of the sample design, or if recently spawned females are better able to avoid the net during the last quarter.

Picquelle compared the sample distribution of the two measures used to estimate spawning fraction--the proportion of day-0 females (those spawning the night of capture) to the proportion of day-1 females (those spawning one night prior to capture). The number of day-1 females in a trawl sample follows a binomial distribution and has a very low intrasample correlation coefficient. The number of day-0 females in a sample does not follow a binomial distribution and has a higher intrasample correlation coefficient. This indicates that the occurrence of day-0 females is more variable between trawl samples than within trawls; that is, each trawl is more homogeneous with respect to the number of day-0 females than if day-0 females occurred randomly throughout all the samples.

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Susan Iacometti, Computer Specialist, reported that the Aerial Marine Resource Monitoring System (AMRMS) pilot logs through the end of 1979 have been sent to keypunching. With the help of Computer Programmer Butch Burris, a survey of what is on tape with INFONET is being compared to the copies of the AMRMS data base on the Burroughs Computer at the University of California, San Diego.

A communication schedule is being organized with the pilots so that Iacometti can keep in touch with them on a regular basis. A meeting is planned with new pilots to encourage them to become active participants in the program and to provide them with specific instructions for completing the logs.

SURVEY SYSTEMS DEVELOPMENT AND EVALUATION

Chilean Scientist Visits Center for Familiarization with Spawning Biomass Estimation Techniques

Dr. Omar Rojas, Chief of Ichthyoplankton program of the Fishery Development Institute of Chile (IFOP), visited Dr. Paul Smith and other scientists at the SWFC in January to become acquainted with the spawning biomass estimation techniques used for the management of northern anchovy. In Chile, Dr. Rojas has summarized the ichthyoplankton results from Pacific sardine, anchovetta, and the mackerels, and has conducted standard quantitative surveys in the past year which reveal the geographic extent of the newly expanded Pacific sardine spawning biomss. These surveys also show declines in the spawning range and abundance of anchovetta. Dr. Rojas, Dr. Smith, and Oceanographer Laurence Eber will discuss the oceanographic and population consequences of these species changes with Dr. Richard Parrish and Dr. Andrew Bakun in Monterey in February at the Pacific Environmental Laboratory of the SWFC.

MULTISPECIES TAXONOMY PROGRAM

Identification of Samples Obtained During Vertical Stratification Study Virtually Completed

Dr. Geoff Moser reports progress with identification of samples from the vertical stratification study aboard R/V Ellen B. Scripps in 1980. All fish larvae from the MESSHAI (multiple discrete samples) were identified and measured and all anchovy eggs were staged. Samples from the Manta (surface) net were also completed. Shallow and deep Bongo (oblique) net samples are being processed and will be completed in February.

A manuscript on the early life history of blennies of the genus Hypsoblennius is being prepared by Betsy Stevens and Dr. Moser for submission to CalCOFI Reports.

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Beverly Vinter and Ann Matarese of the Northwest and Alaska Fisheries Center's larval fish laboratory visited the La Jolla Laboratory January 29-30 to learn techniques of identification of CalCOFI fish eggs and larvae.

LARVAL FISHES, COASTAL EAST PACIFIC

Plans Made to Measure Evolution of Microplankton Communities

In a continuation of a major objective of the Coastal Division to define the anchovy habitat, Dr. Robert Owen, Oceanographer, is preparing to measure evolution of microplankton communities that arise from coastal upwelling conditions. As Dr. Lasker described in earlier work, upwelling can be detrimental to survival of anchovy larvae. Nutrient enrichment first gives rise to a community dominated by chain diatoms, which are unsuitable as larval fish food. It is believed that this unsupportive ommunity evolves to a supportive community as copepod nauplii and edible protista subsequently become numerous.

Dr. Owen plans to collect samples in and well beyond the Pt. Conception upwelling zone from which microplankton changes with time and distance from the source area can be described. Satellite images of sea surface layer characteristics will be used to delimit the upwelling area.

Oceanic Fisheries Resources Division

TUNA/BILLFISH RESOURCES PROGRAM

Center Scientists Assist in Development of Sampling Manuals for ICCAT

Ronald G. Rinaldo, Fishery Biologist, and Atilio L. Coan, Mathematician, met this month with Dr. Philip E. K. Symons, International Skipjack Year Program (ISYP) Coordinator for the International Commission for the Conservation of Atlantic Tunas (ICCAT), during his recent visit to the Center. The three scientists worked in La Jolla on development of final drafts of three sampling manuals which will be used by countries cooperating in the Atlantic-wide ISYP.

The manuals cover procedures and formats for research which will be conducted at dockside, on board research and fishing vessels, and in the laboratories of the participating countries. Procedures, forms, and

instructions for collecting data on fishing effort and catch, catch composition, biological sampling of the catch, environmental parameters, oceanographic conditions, tagging procedures, exploratory fishing, and laboratory sample accounting procedures and analyses are included in the Manuals. ICCAT headquarters in Madrid, Spain, will prepare manuals in the three official languages of the Commission and distribute them to the participating countries for use in the Program.

First Phase of Bluefin Tuna Study Nears Completion

A draft of the final contract report for the first phase of the California Department of Fish and Game (CF&G) Bluefin Tuna Study has been completed. According to Doyle Hanan, CF&G investigator, the report has been submitted to CF&G headquarters in Sacramento for review and approval.

The report contains an overview of the U.S. Pacific tuna fishery, a detailed description of the data base which was compiled during the first phase of the study; and summaries by time and area of catch-effort, landings, and age structure of the catch.

Radio Facsimile Equipment Loaned to American Tunaboat Association

Arrangements have been made to place 42 radio facsimile units owned by the Southwest Fisheries Center (SWFC) on loan to the American Tunaboat Association (ATA). The units, which are presently aboard San Diego-based purse seiners, were previously maintained and administered under the Cooperative Tropical Tuna Advisory (FAX) Program of the SWFC. With termination of funding for that Program on September 30, 1980, the SWFC developed procedures for reduced SWFC involvement in FAX activities. Dick Evans, Oceanographer with the Tuna/Billfish Program, worked with August Felando, President of the ATA, and Jim Steiner, Meteorologist-in-Charge, National Weather Service, San Diego, to complete a transfer of the equipment and maintenance functions to the ATA and for continued transmission of FAX products to the purse seine fleet by the National Weather Service.

The actual loan of the equipment will be for a period of 5 years with option to renew and will become effective about April 1, 1981, following an inventory of equipment currently in the fleet. The assumption of responsibility for the equipment by the ATA insures that no loss in environmental product service to the fleet will result from the loss of funding by the SWFC. In addition, the SWFC and the National Weather Service will continue to receive marine weather observations from purse seiners fishing in the eastern tropical Pacific.

Biological Samping of Foreign Imports of Atlantic Tunas in Puerto Rico Continues

Foreign-caught Atlantic tunas transshipped to Puerto Rico continue to be sampled for fork length, weight, and species composition by Biological Technician Eugene Holzapfel, stationed in Mayaguez, Puerto Rico. Samples are from the catches of baitboats, purse seiners, and longliners registered in France, Ghana, Japan, Korea, Panama, and Spain. Results of sampling during the period January-December 1980 are as follows:

Species	Gear	No. of samples	No. of fish sampled	Tonnage sampled (mt)
Yellowfin	Baitboat	33	2062	227
	Purse seine	11	768	1470
Skipjack	Baitboat	23	1159	3734
	Purse seine	17	858	5437
	Longline	2	100	3
Bigeye	Baitboat	17	910	157
	Purse seine	4	128	131
Albacore	Longline	11	509	2660

MARINE MAMMAL BIOLOGY AND TECHNOLOGY PROGRAM

Field Test Verifies Formula for Tie Down of Net During Backdown

James M. Coe, Leader of the Marine Mammal Technology Project, reports that an empirical formula was tested for calculating the amount of a purse seine to be left in the water in order to have the optimum configuration of backdown channel for releasing porpoise. Thanks to the cooperation of Manuel Caboz, owner, and Captain John Freitas, Jr., the 16-strip net of the purse seiner Carol Linda was measured and the location of the calculated tie-down point for backdown was marked. The following day, the Carol Linda performed a trial set off San Diego with Technology Project personnel observing net performance both underwater and from the vessel. Based on these observations and the Captain's comments, the optimum tie-down point for backdown was established. The tie-down point derived from the trial set observations and the tie-down point derived from the formula based on stretched net depth were exactly the same.

The formula has now been verified for nets of 11, 14, and 16 strips. The staff of the Marine Mammal Technology Project are confident that this formula can be used by vessels in the tuna purse seine fleet to locate backdown tie-

down points accurately and thus eliminate the need to locate tie-down points by trial-and-error on the fishing grounds, an exercise which contributes to porpoise kill. This is especially important for vessels which have not participated in a NMFS-supervised trial set and for nets under construction. The details of the formula and its application are described in a manuscript being prepared by the staff of the Marine Mammal Technology Project.

Computerized Address File Developed for Marine Mammal Mailings

Thomas Shay, Biological Technician, and Ruth B. Miller, Laboratory Technician, recently completed development of a computerized file of names and addresses of persons and organizations with marine-mammal interests. The file will be usd to print mailing labels for the upcoming Cetacean Reproduction Conference mailings and for other mailings. Over 1300 names and addresses of researchers, organizations, and students are incuded in the file. The file will be further developed to allow generation of sub-files, such as lists of scientists specializing in cetacean biology, lists of international organizations, etc.

Manuscript Completed on Development of the Porpoise School Impoundment System

Jacqueline G. Jennings and James M. Coe, Fishery Biologists, with Walter Gandy of the Fisheries Engineering Laboratory, have prepared a manuscript entitled "A corral system for examining pelagic porpoise schools." The Porpoise School Impoundment System (PSIS) was designed to handle porpoise schools of up to 500 animals in a manner compatible with standard yellowfin tuna purse-seine operations. The PSIS attaches directly to the purse seine to catch the porpoise as they are released from the net. The compartmentalized apparatus has a corral capable of holding up to 120 porpoise. They are maneuvered from the corral to chutes where they are individually examined and prepared for other studies. The porpoise can be released individually or held in holding pens for release as a group. The PSIS was used during two research cruises to examine 1319 dolphins for age and sex structure of the schools. It served as a tool for holding animals for placing 656 dorsal-fin tags, administering tetracycline for future age-determination studies, collecting blood samples, and placing radio tags.

Test Software Program Received for Computer Enhancement of Layers in Dolphin Teeth

Dr. Al C. Myrick, Wildlife Biologist, reports the receipt of the first computer program for use in the project's TV-assisted microdigitizer. Using this equipment, a new method to analyze layering patterns in dolphin teeth will be attempted. The objective of the method is to reduce growth-layer groups in teeth to repeating alphanumeric-code group patterns representing computer-enhanced levels of light. The first test runs of the system are scheduled for February. When the computer program is debugged and refined,

Myrick hopes that the system will permit operators to determine age from tooth growth-layer groups in a more objective manner than has been possible in the past.

Layering Rate in Teeth of Captive Spinner Dolphins Monitored for One Year

This one-year project to tetracycline-label and extract teeth from captive Hawaiian spinner dolphins at Sea Life Park, Hawaii, has just been concluded with the final tooth removal this month. The work, begun January 1980, is intended to serve as a control monitor of hard-tissue layering rates and help to establish base-line data necessary for time-layer interpretations in the teeth of wild spinner and spotted dolphin (genus Stenella). The first year's data are being combined with data developed from a retrospective analysis of teeth of other Hawaiian spinner captives which received frequent therapeutic treatments of tetracycline at Sea Life Park for up to 8 years.

Two Manuscripts Completed on Population Dynamics of Porpoise

Two manuscripts have been completed by Dr. Doug DeMaster, Wildlife Biologist, concerning life-history dynamics of porpoise. In one manuscript, "Estimating calf survival for dolphins from the eastern tropical Pacific," DeMaster uses the relationship between the estimted duration of lactation, ("Method 1" in previous work by W. E. Perrin and others) and the estimated duration from birth to weaning ("Method 2"), to estimate calf mortality. DeMaster reports that for exploited stocks, the annual rate of calf survival as estimated by this method ranges from 0.82 to 0.89, and for non-exploited stocks from 0.29 to 0.50. This, however, is based on the provisional assumption that the samples of animals examined are representative of the populations. Other studies have shown that this assumption is not valid, that calves are overrepresented in the kills. The second paper, "Reproductive rates of captive cetaceans," deals with an analysis of 34 reproductive intervals that were reported by Ridgeway and Benirschke (1977: Breeding dolphins; present status, suggestions for the future). The analysis indicates that a 2-year interval between successive calves is most common in captivity, but that one-year cycles (which imply a post-partum estrous) are possible. These results are consistent with inferences derived from study of porpoise involved in the tuna fishery. A major problem in the analysis was not knowing when the captive adult males were allowed to associate with the captive adult females and calves.

SWFC Scientist Participates in Workshop on the Role of Parasites in Marine Ecosystems

Wildlife Biologist Doug DeMaster participated in a workshop on the role of parasites in the marine ecosystem held at the University of California, Santa Barbara (UCSB), from January 19-21, 1981. The workshop was funded by the National Science Foundation Biological Oceanography Program through a

grant to Dr. Armond Kuris of UCSB. Participants included parasitologists from the U.S., Scotland, Canada, and Israel, as well as marine ecologists from the U.S. The workshop goal was to review the current status of marine parasite research and formulate a consensus on where future emphasis (in terms of funding and effort) should be placed in this field. An attempt was made to integrate the fields of parasitology and marine ecology in developing recommendations to NSF. A workshop report will be published within 6 months.

MARINE MAMMAL ASSESSMENT AND MONITORING PROGRAM

Porpoise Sighting Cruise Underway

Dr. David Au, Fishery Biologist, has placed two observers aboard the NOAA research vessel, Oceanographer, on a "not-to-interfere" basis for a cruise in the eastern tropical Pacific. The observers will be collecting data on the distribution of dolphins as part of a continuing study on the ecology of dolphins in the eastern Pacific.

Early Porpoise Observer Data Being Coded

Observations made by scientists aboard U.S. tuna vessels in 1971, 1972, and 1973 are being coded for computer analysis. This material was collected in a different manner than that used for more recent data, and Tom Gronholdt, Biological Technician, reviewed possible approaches for arranging the material in a format comparable to more recent data. He has recommended that the 1975 data forms be used for coding the data. Specific data extraction procedures are currently being finalized and arrangements for coding the data are in place.

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Report on Widow Rockfish Workshop Distributed

A report on the workshop held recently at the Tiburon Laboratory concerning the widow rockfish, Sebastes entomelas, has been edited and distributed to participants by Dr. William H. Lenarz, Leader of the Rockfish Analysis Task. The report consists of a review of the fishery and a summary of a panel session. The review is a condensation of reports and statistics prepared by J. Tagart, Washington Department of Fisheries, R. Demory, Oregon Department of Fish and Wildlife, and L. Quirollo, California Department of Fish and Game. The summary of the panel session was prepared by T. Dark, Northwest and Alaska Fisheries Center and edited by Lenarz and other members of the Tiburon Laboratory staff. The report will incorporate comments by other workshop participants and will be included in the collection of papers from the workshop that is to be published.

Port Samplers Receive Additional Training

Employees of the National Marine Fisheries Service and the California Department of Fish and Game, who have been sampling rockfish landings for the Rockfish Analysis Task, received additional training this month by Fishery Biologist Tina Echeverria at California ports between Eureka and Morro Bay. The samplers were instructed in processing the materials they have been collecting in a program that, in addition to monitoring the fishery, attempts to determine the age of maturity, and the use of predator gut-contents as an index of recruitment strength. Previously the processing of these materials was performed at the Tiburon Laboratory by other workers, but current fiscal restraints have required shifting the processing to the ports. Assigning this added work to the samplers, however, has required a reduction in sampling.

FISHERIES DEVELOPMENT INVESTIGATION

Contracts for Experimental Fishing Cruises and Fishing Gear Assigned

A contract was issued to Robert Glenn, owner/Captain of the fishing vessel, Sanibel, for a chartered fishing cruise to begin on February 3, 1981. The chief objective of the cruise is to learn more about the seasonal availability of fishes in deep waters off south-central California. Seafood processors and fishermen of that area are especially interested to learn if commercial species are available during winter, when supplies of fish are

usually low. Fishing trails will be carried out in waters deeper than 200 fathoms where, until recently, commercial fishing has been rarely attempted. A search will be made for concentrations of other species (such as channel rockfish, blackgill rockfish, and sablefish) as well as Dover sole. One fisherman has recently demonstrated that quantities of Dover sole are available in deep water during November to December. Fishermen from the area have been involved in the formulation of the Laboratory's cruise plans.

A second charter cruise, which will be primarily concerned with shortbelly rockfish, will be conducted in late February or early March. Primary objectives of the cruise are to test a new off-bottom trawl and to catch market samples of shortbelly rockfish with a Polish rope wing mid-water trawl. A contract has been let for the construction of the new trawl. The cruise schedule will be drawn up after consultations with the vessel owner and prospective users of shortbelly rockfish. A few days of the 12-day charter period will be devoted to studying and capturing euphausiids in the area off Monterey Bay.

Octopus Studies Planned

Construction has begun on 100 additional traps for use in a study of octopus in southern California. Lieutenant Patrick Rutten, NOAA Corps, met with Eric Anderson and Larry Miller of Fort Bragg, California, who will fish for octopus using the 100 Japanese-style box traps. They plan to begin fishing before the end of January.

Lt. Rutten also met at the Tiburon Laboratory with Dr. Eric Hochberg of the Santa Barbara Museum of Natural History to discuss a proposed cooperative study of northern and central California octopus species.

PHYSIOLOGICAL ECOLOGY INVESTIGATION

Whipple Chairs Session at NSF Workshop on Parasites in Marine Ecosystems

Dr. Jeannette A. Whipple, Leader of the Physiological Ecology Investigation Group, participated in the National Science Foundation Workshop on "The Role of Parasites in Marine Ecosystems," which was held at the University of California, Santa Barbara, January 18-21, 1981. Attendees at the workshop included people from various universities and agencies in Israel, Great Britian, Canada, and the United States. At the workshop, Dr. Whipple chaired a session on fisheries mariculture. A summary of the workshop presentations will be prepared and submitted for publication in the Journal of Parasitology and Bulletin of Ecological Society of America.

Processing Striped Bass Samples Continues

During January, the Physiology staff continued processing striped bass samples and analyzing data generated during 3 years of field sampling in the San Francisco Bay area. Plans are also being completed for laboratory studies on the interactive effects of pollutants and parasites. This research is scheduled to begin in the spring of 1981.

SOUTHWEST REGIONAL DATA MANAGEMENT AND ADP OPERATIONS

DOC Instructs Center to Move All Data and Program Files off INFONET

Fred Kellenberger, Data Systems Manager at the Southwest Fisheries Center, reported this month that the Southwest Fisheries Center has been instructed by NOAA and the Department of Commerce (DOC) ADP (Automatic Data Processing) Division to move all of their data and program files off the INFONET system and to use the University of California, San Diego's Burroughs and VAX computer systems in its place. A request has been made for an increase of $30,000 to the dollar limit on UCSD's services for the period through March 31, 1981, to implement this data move. In addition, a request has been made for an extension of the UCSD computer contract from April 1981 through December 1983 for computer services during the lengthy period of time required for planned procurement of mini-computers for the Center. These requests have received approval from NOAA and are now in the process of being reviewed at the Department of Commerce before submission to GSA.

Commerce has restricted updates to all files on INFONET and has specified that any generation of porpoise and financial reports must be solely on data files as of December 31, 1980. To alleviate this situation, a request has been submitted to DOC for sole source authority to utilize INFONET's services for $25,000 in order to generate financial reports and the most critical of the porpoise reports for FY 81.

According to the Computer Sciences Corporation (CSC), when services are terminated, the disposition of government data files is accomplished by instructions from the subscriber to CSC for transfer to magnetic tapes. A letter has been sent to DOC detailing the Center's procedures for moving off INFONET. Data base files would be processed by the unpacking routines and transferred to the output disk files with user-defined formats. These formatted files, program source code files, and ASCII data files would be written using the system's utility program, TAPE$, onto domestic and foreign tapes. The foreign tapes, which are SWFC-owned, will be shipped to the Center for processing on the UCSD system. The domestic tapes will remain at the CSC's site as the Center's back-up tapes. When the Center is satisfied with the accuracy of the data transfers, they will notify CSC that the domestic tapes can be erased and released into their system. To accomplish the transfer of the data base files, Robert Butler, Computer Programmer, wrote, tested, and completed the unpacking routines called PUMPER and DUMPER. These routines access the file's element descriptors and accordingly unpack the data base record into data elements for output formatting by the user.

The shift to use of UCSD's computers means that there will be a significant increase in workload on the UCSD system. On January 22, Ed Coughran, Director of UCSD's Computer Center, and Jerry Fitzsimmons, their Chief Consultant, conducted a meeting for the staff in the Center's auditorium. The purpose of the meeting, which was attended by project leaders

and computer users, was for an exchange of information on computer processing needs and to explain how the UCSD's computer staff plans to meet the Center requirements for timely processing of data.

Fishery Information Network (FIN) Study Nears CompletionF

Data Systems Manager Fred Kellenberger of the Southwest Fisheries Center met with personnel from the Hawaii Division of Fish and Game (HDFG) on January 22 to discuss the progress of the FIN system study for the Hawaii area. The specific purpose of this meeting was to determine the requirements for data by principal users of the statistical fishery system, which include HDFG, NMFS, and the Western Pacific Fishery Management Council. According to Kellenberger, the study should be completed by May 1981.

On January 28, Kellenberger and Lt. Mark Sullivan attended a meeting in Long Beach, California, with California Department of Fish and Game personnel, and Science Application, Inc. (SAI) to discuss the FIN system study for California. The draft system study, which is near completion by SAI, was reviewed. SAI plans to develop a Volume II which will summarize the study and recommendations. This study should be completed by March 1, 1981.

1982/1983 ADP Initiative Descriptions Prepared

The FY 1982/1983 ADP Initiative Descriptions were prepared in prescribed detail and submitted to NMFS' Data Management and Information Systems office in Washington, DC. The initiative will serve as the basis for SWFC's future telecommunications procurement actions, whereas the SWC's ADP long-range plan will consist simply of refinements to the 1982/1983 initiatives. The package included work statements and requirements descriptions for groupings of ADP applications. These groupings/categories were bioenvironmental data, catch/effort data, socio-economic data, legal/enforcement data, and administrative data. For each application under these categories, a table of work requirements presents tabulated information on the present average number of characters per year for input and for output, the present average number of records per year, the average number of characters per record, the present transmission mode, the present and required response time for outputs, the present and required timeliness of the data, and the expected annual percent growth rate of data volume.

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Computer Programmer Oden Burris completed the program code for processing and analyzing the California sportfish data for Dr. Richard Parrish of PEG, according to his specifications. A test file of the output data has been created and will be reviewed by Parrish before production runs.

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The analysis of the request from the Southwest Region to produce yearly California fish landings tapes for the Statistics Branch in Washington, DC, has begun. In order to accurately define the specifications for this project, Eric Knaggs and Pat Donley, Southwest Region, visited the La Jolla Laboratory on January 21 and met with the contract programmer assigned to this project.

MISCELLANEOUS

HONORS AND AWARDS

Andrew J. Aldridge, Librarian Hazel S. Nishimura, and Computer Aid Lucille T. Tsukano of the Honolulu Laboratory were presented certificates for sustained superior performance.

Lieutenant Patrick J. Rutten, NOAA Corps, detailed to the Tiburon Laboratory, received a sustained superior performance rating and cash award for the period October 1979 to October 1980.

PUBLIC AFFIARS

Tiburon Laboratory

On January 30, Nancy Becker, Radio Station KTIM, San Rafael, California, recorded intreviews with Director Norman Abramson and Susan E. Smith. The station is including the Tiburon Base in a series it is doing on historical places of Marin County.

SEMINARS

La Jolla Laboratory

January 6 - Dr. Mia Tegner, Scripps Institution of Oceanography, presented a talk entitled, "The regulation of red sea urchin populations in southern California."

13 - Dr. Brian J. Rothschild, Center for Environmental and Estuarine Studies, University of Maryland (and former Director of the Southwest Fisheries Center), spoke on "Fisheries policy in the United States."

27 - Charles Bishop, Assistant Director, Marine Physical Laboratory, Scripps Institution of Oceanography, lectured on, "Marine Physical Laboratory's floating research platform."

29 - Dr. Daniel Goodman, Scripps Institution of Oceanography, presented a seminar on "Modelling techniques for population growth rate estimates."

Tiburon Laboratory

January 27 - A joint San Francisco State University/Tiburon Laboratory seminar entitled "Job opportunities for fishery biologists" was held at the Tiburon Laboratory. The following panel members participated in the group talk: James Adams, Pacific Gas and Electric; Chris Dewees, University of California, Davis; Maria Johnston, California Department of Fish and Game; Susan McCormack, C H_2 M-Hill; and Edward Ueber, Tiburon Laboratory.

TRAINING

Tiburon Laboratory

January 13-14 - Linda Bradley, Clerk Typist, "Federal Travel Regulations," OPM, San Francisco, CA.

24 - Maxwell B. Eldridge, Supervisory Fishery Biologist, "Peak Performance Workshop," San Francisco, CA.

29-30 - Jeanne Hurst, Administrative Clerk, "Basic Transportation Orientation," General Servics Administration, San Francisco, CA.

VISITORS

Honolulu Laboratory

January 12 - Ola B. Watford, Chief, Space Management and Design Branch, Office of Administrative Operations, NOAA, Rockville, Maryland, arrived for a week's visit at the Honolulu Laboratory to conduct a space audit requested by the Southwest Regional Director. Watford was given a tour of the Kewalo Research Facility by R. Shomura during her visit.

14 - Andreas Tzioumis, Input Output Computer Services, Inc., Waltham, Massachusetts, visited T. Otsu and R. Gooding to discuss general fisheries problems and potential use of Loran C in Hawaiian fisheries.

- Logan Kock of Guam met separately with T. Otsu and R. Shomura to discuss vessel charters.

19 - Dr. Tsuneyoshi Suzuki of Hokkaido University arrived in Honolulu to participate in the cruise of the Hokusei Maru. Dr. Suzuki met with R. Shomura, T. Otsu, and W. Matsumoto to discuss the cruise.

20 - Dr. Richard Radke of the Pacific Gamefish Foundation visited R. Shomura to discuss research in general.

21 - William Ripley of New York met with R. Shomura and Dr. Skillman to discuss Indian Ocean Fishery Commission and Indo-Pacific Fishery Commission matters.

26 - Dr. I. Barrett, Director of the La Jolla Laboratory, SWFC, arrived in Honolulu to participate in the meeting of the Scientific and Statistical Committee, WPRFMC.

La Jolla Laboratory

January 5- 6 - Bill Gordon, Director, Office of Resource Conservation and Management, NMFS, Washington, D.C.

12-13 - Dr. Howard Feder, University of Alaska, visited Dr. Lasker for discussions on the Bering Sea project.

21 - Dr. Earl G. Droessler, Director of University Affairs, NOAA.

30 - Carroll McCutcheon, Dale Gough, and John Hinman, NASO Personnel, Seattle.

Tiburon Laboratory

January 5 - Pete Chorney, NMFS, Santa Rosa, CA.

6 - Brad Miller, Prince George's Community College, Upper Marlboro, MD.

- Ann Chamberlain, San Francisco State University, San Francisco, CA.

- Tokihide Ichinose, ABS Fishing Company San Francisco, CA.

- Terry Johnson, University of Washington Seattle, WA.

- Lani Uhry, National Audubon Society-Bay Shore Studies
  Tiburon, CA.

14 - Thomas M. Renaglian, Sacramento Public Affairs Center
  Sacramento, CA.

15 - Michael Adams, NMFS, Honolulu Laboratory
  Honolulu, HI.

- Dr. Sam Herrick, Southwest Fisheries Center
  La Jolla, CA.

- Dr. Dan Huppert, Southwest Fisheries Center
  La Jolla, CA.

- Wes Silverthorne, Southwest Region
  Terminal Island, CA.

16 - Eric Hochberg, Museum of Natural History
  Santa Barbara, CA.

19 - Tokihide Ichinose, ABS Fishing Company
  San Francisco, CA.

21 - Paul R. Eastman, Marin Audubon Society
  San Anselmo, CA.

- Scott Lithgow, KIM Productions
  Boston, MA.

28 - Julie Ring, California Department of Fish and Game
  Marine Resources Region, Mendocino, CA.

29 - Michael Monroe, U.S. Fish and Wildlife Service
  Sacramento, CA.

- Richard Scott, KRON Television
  San Francisco, CA.

- Lon del la Torre, KRON Television
  San Francisco, CA.

30 - Nancy A. Becker, KTIM Radio Station
  San Rafael, CA.

- Philip Helfrich, Hawaii Institute of Marine Biology
  Kaneohe, HI.

Pacific Environmental Group

January 6 - Eugene E. Collias, Northwest Consultant Oceanographers,
  Inc., Seattle, WA.

23-30 - Jerry Starrett, Northwest Administrative Service Office Seattle, WA.

29 - Dr. Preisendorfer, NOAA, Pacific Marine Environmental Laboratory, Seattle, WA.

MEETINGS AND TRAVEL

Honolulu Laboratory

January 6- 9 - R. Shomura traveled to Monterey, CA, to participate in the Center Management meeting held on January 7-8.

14 - O. Watford, R. Shomura, and D. Gates met to discuss Watford's recommendations resulting from her space audit.

15 - R. Shomura, R. Uchida, and several other staff members met with Keith Coburn and Jay Puffinburger, owners of the R/V Typhoon, to discuss the charter of their vessel by the Honolulu Laboratory for a cruise in the Guam and the Northern Marianas area.

- R. Shomura and R. Uchida participated in a meeting of the Coordinating Council on Research - Northwestern Hawaiian Islands.

20 - R. Shomura, T. Otsu, and W. Matsumoto met with the Western Pacific Program Office personnel to discuss the planned gill net fishing activities on the Hokusei Maru.

- R. Shomura, Dr. Skillman, F. Riggs, and Fred Kellenberger met to discuss the Fishery Information Network.

21 - R. Shomura and Dr. Skillman attended the Bottomfish Planning Team meeting at the WPRFMC office.

23 - The Spiny Lobster Advisory Subpanel, WPRFMC, met in the Honolulu Laboratory conference rooml

26 - The Billfish Advisory Subpanel, WPRMFC, met in the Honolulu Laboratory conference room.

27 - The Scientific and Statistical Committee, WPRFMC, met the Honolulu Laboratory conference room.

29 - R. Shomura and Dr. Barrett departed Honolulu to attend the WPRFMC meetings in Saipan (February 3) and Guam (February 4-5) and to visit the fishery facilities in Palau.

La Jolla Laboratory

January 5- 6 - Dr. Dan Huppert was in Monterey, CA to attend the Pacific Council's Scientific and Statistics Committee meeting. Dr. Huppert has been selected as vice chairman of the Committee.

6 - Dr. Wesley Parks traveled to Long Beach, CA to participate in the Pacific Council's Billfish/Shark Management Plan Development Team meeting.

6- 8 - Traveling to Monterey, CA to attend the Center Management meeting were: Dr. Izadore Barrett, Director, John Carr, Fred Kellenberger, Dr. Reuben Lasker, Dave Mackett, and Ben Remington. Dr. Barrett also attended the Pacific Council's SSC meeting.

8-11 - Dr. Doug DeMaster traveled to Arroyo Grande, CA to attend a regional forum on the management of sea otter and shellfish fisheries in California.

11-14 - Dr. Gary Sakagawa was in Washington, D.C. to attend the U.S.-Canada albacore negotiations.

12 - A State-Federal meeting on swordfish, billfish, and sharks was held at the Center with David Mackett of the SWFC, M. Odemar, H. Frey, F. Haggerman, and D. Bedford of the California Department of Fish and Game in attendance.

13 - Dr. Doug DeMaster was in Long Beach to participate in an aerial survey of sea lions with personnel from the California Department of Fish and Game.

14-16 - Dr. Dan Huppert and Dr. Sam Herrick were in Tiburon, CA to attend the meeting of Center/Southwest Region economists to plan FY 1981 socio-economic research.

18-21 - Dr. Doug DeMaster traveled to Santa Barbara, CA as an invited participant in a workshop relevant to the coastal marine mammal ecosystem competition work.

19-24 - Fred Kellenberger was in Honolulu, HI to attend a Fishery Information Network meeting and to plan data management activities.

21-22 - Dr. Paul Smith was in Ensenada, Mexico to discuss fishery management of schooled fishes with Professor Carillo and Dr. Rojas at CICESE.

20-24 - Dr. Michael Laurs traveled to Washington, D.C. to attend a NOSS Instrument Working Group meeting.

21-22 - David Mackett traveled to Seattle, WA to attend a planning session with the Northwest Region and Northwest and Alaska Fisheries Center for the West Coast Data System.

January 26-February 6 - Dr. Izadore Barrett traveled to Honolulu, Palau Island, Guam, and Saipan to attend the Western Pacific Council meetings.

27-29 - Daisy Gaston-Akinwanile traveled to Honolulu, HI to review accounting procedures and to obtain accounting data required for management.

28 - Ben Remington attended presentations made by bidders on the Center's solar project at La Jolla.

January 30-February 1 - Dr. Gary Sakagawa traveled to San Luis Obispo to take part in an American Fishery Society panel on marine mammal-fishery interaction.

Tiburon Laboratory

January 5- 6 - Norman J. Abramson travelled to Monterey, CA to attend the Pacific Fishery Management Council's Scientific and Statistical Committee Meeting.

6 - Dr. Jeannette A. Whipple, Leader of the Physiological Ecology Investigation, hosted a meeting at the Tiburon Laboratory to plan spring experiments for the Cooperative Striped Bass Study. Attendees at the meeting included: Dr. Donald Crosby, Kris Lindstrom, Stephen Mitchell, University of California, Davis; Dr. Gerald Bowes, Marvin Jung, State Water Resources Control Board; Dr. Michael Moser, Carol Reilly, Judy Sakanari, University of California, Santa Cruz; and Nina Hirsch, Tiburon Center for Environmental Studies/San Francisco State University.

7- 8 - Norman J. Abramson participated in the Center Management meeting held in Monterey, CA.

13 - The Physiology staff attended a San Francisco Bay and Estuarine Society meeting at the California Academy of

Sciences, San Francisco. Two papers were presented at the meeting: "Parasitology of striped bass in the San Francisco Bay-Delta Estuary" by Dr. Michael Moser, University of California, Santa Cruz and "Striped bass: Documenting the end or finding a solution" by Nina Hirsch, Tiburon Center for Environmental Studies/San Francisco State University.

15-16 - Edward Ueber hosted a meeting at the Tiburon Laboratory for the Southwest Region and Southwest Center economists, to discuss a 5-year plan on the joint social and economic procedures for data collection.

20-23 - Sus Kato and Sennen Salapare traveled to Avila Beach, Morro Bay, and Monterey, CA, to meet with fishermen, seafood processors, and personnel of the California Department of Fish and Game. Discussions were held regarding two upcoming charter cruises, and alternative fisheries for small boat fishermen.

PERSONNEL ACTIONS

Honolulu Laboratory

January 2 - Robert A. Skillman, Fishery Biologist
Reemployed

11 - Jiro Morisako, Fishery Methods and Equipment Specialist
30-day, Immediate-Need Appointment

- Lynn M. Hondonero, Clerk (Typist)
Appointment Under Stay-in-School Program

16 - Brian M. Miyamoto, Biological Aid (Fisheries)
Temporary, Part-Time Appointment

18 - Henry M. Kishinami, Biological Aid (Fisheries)
Temporary, Part-Time Appointment

19 - Beverly C. Kuriki, Computer Aid
1040-hour Student Appointment

- Edward J. Webman, Computer Assistant
700-hour Appointment

- Karen P. Wendel, Computer Aid
1040-hour Student Appointment

20 - James H. Prescott, Biological Technician (Fisheries)
1040-hour Student Appointment

25 - Roy Mendelssohn, Operations Research Analyst
Reassigned to Honolulu Laboratory from Southeast Fisheries Center, Miami, FL

- Thomas K. Kazama
Reclassification to Fishery Biologist

La Jolla Laboratory

January 5 - Drew Stanley, Biological Technician
Temporary Appointment

16 - Robert Pitman, Biological Technician
Temporary Appointment

- James Catton, Biological Technician
Temporary Appointment

- Charles O'Connell, Fishery Biologist
Retirement

- James Cotton, Biological Technician
Temporary Appointment

18 - Aleta Hohn, Zoologist, TAPER

- Dennis Kremer, Computer Technician
Conversion to Career-Conditional Part-Time

- Ray Stives, Biological Technician
Conversion to Career-Conditional, when actually employed

19 - E. Scott Miller, Biological Aid
Temporary Appointment

20 - Lisa Ferm, Biological Aid
Temporary Appointment

25 - Daisy Gaston-Akinwanile, Budget and Accounting Technician - Promotion

31 - Steve Baumle, Biological Aid
Resignation

Tiburon Laboratory

January 5 - Lisa M. Andrade, Biological Aid
Temporary Appointment

16 - Michael Storer, Biological Aid
Resignation

19 - Margie M. Gepner, Physical Science Technician
Temporary Appointment

UNITED STATES
DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
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